EFFECT OF MINDFULNESS TRAINING ON PLANNING AND SELF-REGULATION SKILLS AMONG STUDENTS WITH DYSLEXIA

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ABSTRACT

The present study was conducted to assess the effectiveness of mindfulness training on planning and self-regulation skills among students with dyslexia. The sample, consisting of 40 students with dyslexia (20 in Experiment Group and 20 in Control Group), was selected from govt. schools of Una district of Himachal Pradesh. The planning and self-regulation skills of the students were assessed using meta-cognition questionnaire, developed by the investigators. The investigators used pretest-posttest control group experimental design for the study. The experiment group was exposed to six weeks' mindfulness intervention. The difference in the mean gain scores on planning and self-regulation for both the groups were studied using t-test. The results show that mindfulness intervention has significantly improved planning and self-regulation skills of the students with dyslexia.

KEYWORDS: Mindfulness intervention; Self-regulation; Meta-cognition; dyslexia.

INTRODUCTION

One of the main goals of education in today's scenario is not only to enrich students with enormous amount of knowledge but also to develop some important skills such as planning and self-regulation among them to make them independent learners. Planning and self-regulation are the major components of meta-cognitive skills, which lead to academic, emotional and social improvement of the students. By using these skills effectively, students can achieve their goals. Wolters (2003); Boekaerts and Corno (2005) also supported the argument that for any student to learn and achieve academic success the student must be actively engaged in the learning process, and be able to plan, monitor, regulate and control his/her cognitive processes as well as attitudes and behaviours.

The reviews of the researches indicate that mindfulness is one such intervention which can improve the meta-cognitive skills such as planning and self-regulation of the children (Evans, Baer & Segerstrom, 2009; Flook et al, 2010; and Razza, Bergen-Cico & Raymond, 2013).

Mindfulness means maintaining a moment by moment awareness of our thoughts, feelings, bodily sensations, and surroundings by paying attention in the present moment. Mindfulness involves accepting our thoughts without being judgmental. While practicing mindfulness one should sense what is there in the present moment instead of the past or imagining the future.

Studies have shown that practicing mindfulness, even for few weeks, can bring lots of physical, psychological and social changes (Broderick & Metz, 2009; Dellbridge & Lubbe, 2009). Mendelson, Greenberg, Dariotis, Gould, Rhoades and Leaf (2010) reported in their study on fourth and fifth graders that the school-based mindfulness and yoga intervention for 12-weeks reduced involuntary stress responses and improved mental health outcomes and social adjustment of the participants. Zylowska et al (2007) reported improvements in ADHD symptoms and test performance on tasks measuring attention and cognitive inhibition among the participants of an 8-week mindfulness training program for adults and adolescents with ADHD. Semple, Reid and Miller (2005) conducted a 6-week mindfulness training program for anxious children (aged 7 to 8 years) and found improvements in their levels of attention. Results of the study conducted by Beauchemin, Hutchins and Patterson (2008) showed that the participants (adolescents with learning disability) of 5-week mindfulness meditation intervention demonstrated decreased state and trait anxiety, enhanced social skills, and improved academic performance. Jimenez, Niles and Park (2010) also tested a model for understanding the relationship between dispositional mindfulness and depressive symptoms through three types of affect regulation: emotion regulation, mood regulation and self-regulation and found that mindfulness might serve a regulatory function by targeting low positive emotionality, poor mood regulation, and negative self-concept.

Researches evidence (Johnson, 2012; Narang & Saini, 2013) shows that one of the effective tool that students can use to improve their academic performance, regardless of their ability, is their self-regulation. It is the process by which students take charge of their own learning, monitoring their behaviour and progress and make adjustments to get desired results. It's the transformation of thought into purposeful action but students with dyslexia struggle academically as well as in other aspects of life as they do not have effective strategies for working through challenges. So, in the present study Mindfulness training as an interven-tion was provided so as to study its effect on the planning and the self-regulation skills of elementary school students having dyslexia.

Objectives

1. To study the differences in pre-test and post-test mean scores on (i) Planning skill and
   (ii) Self-regulation skill of students with Dyslexia in Control Group (CG).

2. To study the differences in pre-test and post-test mean scores on (i) Planning skill and
   (ii) Self-regulation skill of students with Dyslexia in Experiment Group (EG).

3. To study the effect of Mindfulness training on Planning skill of elementary school students with dyslexia.

4. To study the effect of Mindfulness training on Self-regulation skill of elementary school students with dyslexia.

Methods and Procedure

Design of the study: The present research is experimental in nature with pretest-posttest control group experimental design. Six weeks' Mindfulness intervention was given to the experimental group only.

Sample of the study: The two government schools of Una district of Himachal Pradesh were selected for the identification of the sample i.e. students with dyslexia studying in classes 6th and 7th. After the identification, the sample was matched school wise, gender wise, intelligence wise and grade wise. Finally, the selected 40 students were randomly assigned to two groups i.e. Experiment Group (EG) and Control Group (CG).

Procedure adopted for data collection: First of all, the initial sample of 239 students was screened using teacher referral form. Then Standard Progressive Matrices (SPM) test was administered to select the students with average or above average intelligence followed by administering of Diagnostic Test of Reading Disorder (DTRD). Thus, after administering these aforementioned identifying tools, 44 students were found to meet the criteria of selection. After matching, final sample of 40 students with dyslexia were selected. This sample of 40 students was then randomly allotted to two groups viz. Experiment Group (EG) and Control Group (CG). Experiment Group (EG) was exposed to Mindfulness intervention for six weeks. Pre-testing and post-testing on planning and self-regulation skills were done respectively for both the groups.

Tools used: The following tools were used for the present study:

1. Teacher referral form made by the investigator for the identification of students with dyslexia.

2. Standard Progressive Matrices (SPM) by Raven, Raven and Court (2000) to measure the intelligence level of the students.

3. Diagnostic Test of Reading Disorder (DTRD) by Swarup and Mehta (2003).

4. Metacognition Questionnaire developed by the investigators.

Statistical techniques used: Descriptive statistical analysis such as mean, median, mode, standard deviation, skewness and kurtosis were used to study the nature of distribution. Inferential statistics i.e. t-test was used to test the hypotheses.

RESULTS AND DISCUSSION

Table 1: Mean, Median, Mode, Standard Deviation, Skewness, and Kurtosis values on Planning and Self-regulation skills of students with dyslexia in CG and EG at the pre-test stage

Variable	Group	Mean	Median	Mode	SD	Sk	Ku
Planning	CG	2.650	3.000	2.000	1.040	-0.133	-1.069
	EG	2.648	2.500	2.000	1.226	-0.386	-0.702
Self-regulation	CG	2.700	3.000	3.000	0.865	-0.424	-0.105
	EG	2.150	2.000	2.000	1.040	0.296	0.339

Table 1 shows that the mean score values for Planning skill are 2.650 and 2.648 for CG and EG respectively at the pre-test stage. The value of Skewness for CG was -0.133 and that for EG was -0.386. Since these values of skewness lie within the acceptable limits thus, the distribution of measure can be considered as normal for both CG and EG. The value of kurtosis was found to be -1.069 for CG and -0.702 for EG. The value of kurtosis indicates that the curves are slightly platykurtic for both CG and EG.

Further, the mean score values for Self-regulation skill are 2.700 and 2.150 for CG and EG respectively at the pre-test stage. The value of Skewness for CG was -0.424 and that for EG was 0.296. Since these values of skewness lie within the acceptable limits thus, the distribution of measure can be considered as normal for both CG and EG. The value of kurtosis was found to be -0.105 for CG and 0.339 for EG. The value of kurtosis indicates that the curves are slightly platykurtic for both CG and EG.

Table 2: Mean, Median, Mode, Standard Deviation, Skewness, and Kurtosis values on assessment of Planning and Self-regulation skills of students with dyslexia in CG and EG at the post-test stage

Variable	Group	Mean	Median	Mode	SD	Sk	Ku
Planning	CG	2.950	3.000	3.000	0.759	0.086	-1.154
	EG	3.700	4.000	4.000	0.470	-0.945	-1.242
Self- regulation	CG	3.350	3.500	4.000	0.745	-0.697	-0.762
	EG	4.400	4.000	4.000	0.598	-0.393	-0.570

Table 2 shows that the mean score values on Planning skill are 2.950 and 3.700 for students with dyslexia in CG and EG respectively at the post-test stage. The value of Skewness for CG was 0.086 and that for EG was -0.945. Since these values of skewness lie within the acceptable limits thus, the distribution of measure can be considered as normal for CG as well as for EG. The value of kurtosis was found to be -1.154 for CG and -1.242 for EG. The value of kurtosis indicates that the curves are slightly platykurtic for both CG and EG.

Further, the mean score values on Self-regulation skill are 3.350 and 4.400 for students with dyslexia in CG and EG respectively at the post-test stage. The value of Skewness for CG was -0.697 and that for EG was -0.393. Since these values of skewness lie within the acceptable limits thus, the distribution of measure can be considered as normal. The value of kurtosis was found to be -0.762 for CG and -0.570 for EG. The value of kurtosis indicates that the curves are slightly platykurtic for both CG and EG.

Table 3: Homogeneity of variance for assessment at pre-test stage on Planning and Self-regulation skills of students with dyslexia in CG and EG

Variable	Levene Statistic	df_1	df_2	p-value	Remarks
Planning	0.909	1	38	0.346	Not Significant
Self-regulation	0.032	1	38	0.860	Not Significant

Table 3 shows the Levene statistic value for pre-test score of CG and EG groups on assessment of Planning skill of students with dyslexia is 0.909. The p-value came out to be 0.346 which is insignificant. This implies that there exist equal variances for CG and EG at the pre-test stage on assessment of Planning skill.

Further, the Levene statistic value for pre-test score of CG and EG groups on assessment of Self-regulation skill of students with dyslexia is 0.032. The p-value came out to be 0.860 which is insignificant. This implies that there exist equal variances for CG and EG at the pre-test stage on assessment of Self-regulation skill of students with dyslexia.

Objective 1: To study the differences in pre-test and post-test mean scores on (i) Planning skill and (ii) Self-regulation skill of students with Dyslexia in Control Group (CG).

Table 4: Paired samples t-test for pre-test and post-test scores on Planning and Self-regulation skills of students with Dyslexia of Control Group

Variable	Stage	Mean	SD	SED	df	Difference in means (post-pre)	t-value (p-value)	Remarks
Planning	Pre-test	2.650	1.040	0.233	19	0.300	t=1.371 (p=0.186)	Not Significant
	Post-test	2.950	0.759	0.170				
Self - regulation	Pre-test	2.700	0.865	0.193	19	0.650	t=2.371 (p=0.028)	Significant at 0.05 level
	Post-test	3.350	0.745	0.167				

As shown in Table 4, the difference in the pre-test and post-test mean scores on Planning skill of students with dyslexia in the Control Group was found to be 0.300. As compared to the critical (table) value, the obtained t-value for planning skill, i.e., t=1.371, is found to be insignificant.

Further, the difference in the pre-test and post-test mean scores on Self-regulation skill of students with dyslexia in the Control Group was found to be 0.650 respectively. As compared to the critical (table) value, the obtained t-value for self-regulation skill, i.e., t= 2.371, p=0.028, is found to be significant at 0.05 level.

Objective 2: To study the differences in pre-test and post-test mean scores on (i) Planning skill and (ii) Self-regulation skill of students with Dyslexia in Experiment Group (EG).

Table 5: Paired samples t-test for pre-test and post-test scores on Planning and Self-regulation skills of students with Dyslexia of Experiment Group

Variable	Stage	Mean	SD	SED	df	Difference in means (post-pre)	t-value (p-value)	Remarks
Planning	Pre-test	2.650	1.226	0.274	19	1.050	t=3.566 (p=0.002)	Significant at 0.01 level
	Post-test	3.700	0.470	0.105				
Self-regulation	Pre-test	2.150	1.040	0.233	19	1.550	t=6.049 (p=0.000)	Significant at 0.01 level
	Post-test	3.700	0.470	0.105				

As shown in Table 5, the difference in the pre-test and post-test mean scores on Planning skill of students with dyslexia in the Experiment Group was found to be 1.050. As compared to the critical (table) value, the obtained t-value for planning skill, i.e., t=3.566, p=0.002 is found to be significant at 0.01 level.

Further, the difference in the pre-test and post-test mean scores on Self-regulation skill of students with dyslexia in the Experiment Group was found to be 1.550. As compared to the critical (table) value, the obtained t-value for self-regulation skill, i.e., t= 6.049, p=0.000, is found to be significant at 0.01 level.

Objective 3: To study the effect of Mindfulness training on Planning skill of elementary school students with dyslexia.

Table 6: Independent samples t-test for mean gain scores on Planning skill of students with Dyslexia in Control and Experiment Group

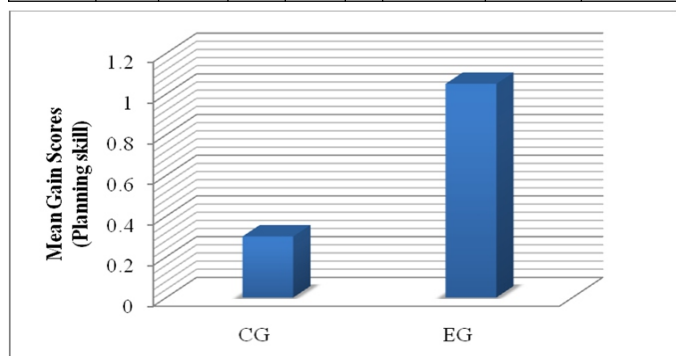| Variable	Group	Mean gain scores	SD	SED	df	Difference in means (EG-CG)	t-value (p-value)	Remarks
Planning	CG	0.300	0.979	0.219	38	0.750	t=2.044 (p=0.048)	Significant at 0.05 level
	EG	1.050	1.317	0.294				

Figure 1: Mean gain scores on Planning skill of students with Dyslexia in Control Group and Experiment Group

The mean gain scores on Planning skill of students with dyslexia in the Control Group and Experiment Group were found to be 0.300 and 1.050 respectively (Table 6, Figure 1). The obtained t-value, i.e., t=2.044 (p=0.048), was found to be significant. Hence, it can be interpreted that the Mindfulness training had significant effect on planning skill of the students with dyslexia.

Objective 4: To study the effect of Mindfulness training on Self-regulation skill of elementary school students with dyslexia.

Table 7: Independent samples t-test for mean gain scores on Self-regulation skill of students with Dyslexia in Control and Experiment Group

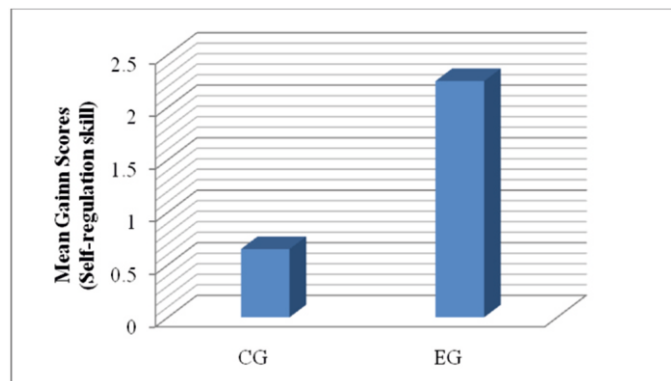| Variable	Group	Mean gain scores	SD	SED	df	Difference in means (EG-CG)	t-value (p-value)	Remarks
Self - regulation	CG	0.650	1.226	0.274	38	1.600	t=4.085 (p=0.000)	Significant at 0.01 level
	EG	2.250	1.251	0.280				

Figure 2: Mean gain scores on Self-regulation skill of students with Dyslexia in Control Group and Experiment Group

The mean gain scores on self-regulation skill of students with dyslexia in the Control Group and Experiment Group were found to be 0.650 and 2.250 respectively (Table 7, Figure 2). As compared to the critical (table) value, the obtained t-value, i.e., t=4.085 (p =0.000), was found to be significant. Hence, it can be interpreted that the Mindfulness training had significant effect on self-regulation skill of the students with dyslexia. In other words, self-regulation skill of students in EG improved significantly after training as compared to students in CG who were not exposed to Mindfulness training. Chiesa, Calati and Serretti (2011); Vago and Silbersweig (2012); Chiesa, Serretti and Jacobsen (2013); and Razza, Bergen-Cico and Raymond (2013) are supporting the above results.

CONCLUSION

The current study investigated the effectiveness of Mindfulness training on planning and self-regulation skills of students with dyslexia. The results indicate that the students with dyslexia who were exposed to six weeks' mindfulness training (i.e., the students in EG) have shown significant improvement in their scores on planning and self-regulation skills. Therefore, investigators advocate the use of mindful practices for students, especially students with dyslexia, so as to improve their planning and self-regulatory skills which may bring improvements in their academics and hence may further improve their psychological and social well-being.

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